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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND  
SALES hereby certify that annexed is a true copy of the Provisional specification  
in connection with Application No. 2003900461 for a patent by SERGIO DIAZ  
and RABIH MOUGHEL BAY as filed on 29 January 2003.



WITNESS my hand this  
Sixteenth day of June 2003

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AUSTRALIA  
Patents Act 1990

PROVISIONAL SPECIFICATION

Applicants:

RABIH MOUGHELBAI

SERGIO DIAZ

Invention Title:

A TYING DEVICE

The invention is described in the following statement:

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## A TYING DEVICE

### Field of the Invention

The present invention relates to a tying device. In one form the invention relates to a cable tying device for tying to a single cable in a looped manner, or for tying a number of cables together, and will primarily be described with reference to this context. The device can also be used for identification of the cable/s to which it is tied. It is to be understood that the invention has broad use in securing and tying as well as identification applications for all manner of cables, ropes, hoses, cords and the like.

### Background Art

Apparatus for tying a cable is known in the art. In particular, with electrical type cabling it is known to use thin plastic cable ties to join cables together or, for example, to secure cables to walls or a framework in a non-releasable manner. Such devices are used in order to protect the cable itself from being pulled, broken etc as well as from representing a trip hazard for workers.

The power cables of loose electrical equipment such as fans, power tools, computers, toasters etc are often most conveniently stored in a rolled up fashion for storage or transport by such cable ties, although these ties are not readily undone when the cabling is needed in use, and normally cannot be re-used when untied.

### Summary of the Invention

In a first aspect the present invention provides a tying device including:

- an elongate member for releasable securement at a cable by wrapping around the cable; and
- an enlarged portion arranged on the member for insertion through a hole located in the member, the enlarged portion being at least in part of a thickness greater than a narrowest width dimension of the hole.

When the term 'thickness' is used in relation to the enlarged portion it refers to a height or depth dimension of that enlarged portion rather than to any transverse width dimension of the portion.

One advantage of a tying device according to the invention is that, when wrapped circumferentially about a cable to form a collar, the device remains secured to itself, but can also be released so that the device can be re-used many times. The device can be used for tying to or together one or a large number of cables of various diameters, for example, by varying the length of the elongate member.

Preferably the enlarged portion is of a transverse width greater than any width dimension of the hole.

Preferably the enlarged portion is located at one end of the elongate member. Preferably the hole is located adjacent to an opposite end of the elongate member.

Preferably the enlarged portion defines a shoulder where it joins the elongate member such that, in use when the enlarged portion has been inserted through the hole, the shoulder is seated at and abuts an edge of the hole to releaseably secure the device at the cable.

Preferably the shoulder is at least partially rounded. In an alternative preferred arrangement, the shoulder is bevelled.

Preferably the width of the hole is equivalent to or greater than the width of the elongate member.

Preferably a remote end of the enlarged portion is tapered to facilitate insertion thereof into the hole.

5      Preferably the enlarged portion of the device at least is made of a flexible material. Most preferably the elongate member is a strap.

In a second aspect the present invention provides a tying device including:

- 10      - an elongate member for releasable securement at a cable by wrapping around the cable;
- 15      - an enlarged portion arranged on the member for insertion through a hole located in the member, the enlarged portion including a raised portion thereon to provide that part of the enlarged portion with a thickness greater than a remainder of the enlarged portion.

20      Preferably the part of the enlarged portion that is raised has a thickness which is also greater than the elongate member. Preferably the elongate member has the same thickness as the remainder of the enlarged portion.

An advantage of this aspect of the tying device is that the raised part of the enlarged portion can provide greater visual prominence.

25      Preferably indicia is pre-applied to an external surface of the raised portion which in use can facilitate identification of a cable to which the tying device is releasably secured. The raised portion can also be formed of a different colour material to further enhance and/or

30      differentiate its appearance.

Preferably the device of the second aspect is otherwise as defined in the first aspect.

In a third aspect the present invention provides a tying device including:

- an elongate member for releasable securement at a cable by wrapping around the cable; and
- 5     - enlarged portions at respective opposing ends of the member, each being enlarged relative to the member for the length of the member, with one enlarged portion being insertable through a hole located in the other enlarged portion.

10     An advantage of this aspect of the tying device is that the device is easier grip with a user's fingers and thus easier to handle and to tie in use.

In a fourth aspect the present invention provides a tying device for identifying a cable of an electrical  
15     appliance, the tying device being attachable to the cable and having a preprinted appliance name thereon.

An advantage of this aspect of the invention is that, when e.g. wrapped circumferentially about a cable to form a collar, the tying device can allow a user to readily  
20     identify the appliance to which the cable is connected, or to identify the cable itself. This is particularly useful in situations where a plurality of appliance cables are located in close proximity to one another.

Preferably the preprinted appliance name is located  
25     on an external surface of an enlarged portion of the tying device.

Preferably a plurality of the tying devices are supplied as part of a unit and are detachable from the unit for use. Most preferably the unit is a card.

30     Preferably the tying device of the fourth aspect is otherwise as defined in the first, second or third aspects.

In a fifth aspect the present invention provides a card including a plurality of detachable elongate members, each of the members being frangibly joined to the card for detachment therefrom and each being made of the same material as the card, an enlarged portion being defined in at least one of the members for insertion in use through a hole located in the member, the enlarged portion being at least in part of a thickness greater than a narrowest width dimension of the hole or a thickness of an adjacent part of the elongate member.

An advantage of this aspect of the invention is that a plurality of elongate members can be formed at once by being e.g. stamped out of a single card. The elongate members need not be identical but can have different shape and size dimensions determined by the stamping tool used.

Preferably the enlarged portion has a transverse width greater than the transverse width of an adjacent portion of the elongate member.

Preferably the or each member of the fifth aspect is otherwise as defined in the first, second, third or fourth aspects.

In a sixth aspect the present invention provides a system for differentiating two or more cables of two or more respective appliances, the system including a respective means for labelling each cable, wherein each means for labelling is provided in a differentiated form from each other means for labelling.

Preferably each means for labelling includes a tying device for tying the means to its respective cable.

Preferably the tying device is as defined for the first, second, third or fourth aspects of the invention. Preferably the means for labelling are respectively the

plurality of detachable elongate members on the card of the fifth aspect of the invention.

#### Brief Description of the Drawings

5        Notwithstanding any other forms which may fall within the scope of the present invention, preferred forms of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

10        Figure 1 shows a plan view of one embodiment of a tying device in accordance with the invention.

      Figure 2 shows a side elevation view of the embodiment shown in Figure 1.

      Figure 3 shows an end elevation view of the embodiment shown in Figure 1 when viewed along arrow 3-3.

15        Figure 4 shows a plan view of one embodiment of a card in accordance with the invention, the card including a plurality of detachable tying devices of the type shown in Figures 1 to 3.

20        Figure 5 shows a plan view of a further embodiment of a tying device in accordance with the invention.

      Figure 6 shows a side elevation view of the embodiment shown in Figure 5.

#### Modes for Carrying out the Invention

25        Referring to Figures 1 to 3, a tying device is shown in the form of an identification tag 10. The tag 10 is elongate and in use is wrapped around a cable and releasably joined to itself to form a collar about the cable. As shown in the drawings the tag 10 has an  
30        enlarged portion shaped as a flattened octagon or diamond head 14 located at one end of a strap portion 18 of the tag 10.



In use the diamond head 14 is forcibly inserted through a hole 16 which is located in an enlarged, square-shaped opposing end portion 17 of the strap 18. The diamond head 14 has a thickness dimension 20 that is greater than the narrowest width dimension 22 of the hole 16 so that, after insertion into the hole 16, the thickness of the diamond head 14 causes that head to be retained in the hole 16. In use an end edge of the raised upper exterior surface 30 of the diamond head 14 forms a shoulder 31 which locates in seating abutment with the edges or rim of the hole 16.

In the preferred embodiment shown, the diamond head 14 also has a transverse width dimension 24 that is greater than the width 22 or the breadth dimension 26 of the rectangular shaped hole 16. Thus when the tag 10 is deployed and secured about a cable and the diamond head 14 has been inserted into the hole 16, in this preferred embodiment the edges of the hole 16 come into abutment with a further shoulder of the diamond head 14 in the form of two bevelled sides 27A, 27B. In other embodiments the enlarged portion of the tag need not be of a transverse width dimension greater than the width of the strap portion, and the head can be simply retained in the hole by the seating abutment of a shoulder of the head (shoulder 31 in the preferred embodiment) with the edges or rim of the smaller sized hole in the tag. In such an embodiment the width of the hole can be equivalent to or greater than the width of the strap portion, as is the case in the preferred embodiment shown in Figures 1 to 3.

When the tag 10 is wrapped circumferentially about a cable to form a collar, the tying device remains secured to itself, but can also be released so that the device can be re-used many times. To facilitate this, in the

preferred embodiment the entire tag 10 is made of a flexible plastic material to facilitate the expansion of the hole 16 and/or the compression or folding of the diamond head 14 so that the diamond head 14 can pass  
5 through the hole 16. In some embodiments only the enlarged portion need be made of a flexible material to ensure that the enlarged portion can be secured into and released from the hole.

In a further preferred embodiment of a tag 110 shown  
10 in Figures 5 and 6, the enlarged portion of the tag 110 is shown in the form of an elongate oval head 114, which in use is forcibly inserted through a hole 116. In this embodiment, the oval head 114 has a thickness dimension 120 that is greater than the narrowest width dimension 122  
15 of the hole 116 so that, after insertion into the hole 116, the thickness of the oval head 114 causes that head to be retained in the hole 116.

In this preferred embodiment, when the tag 110 is deployed and secured about a cable and the oval head 114  
20 has been inserted into the hole 116, the edges of the hole 116 come into abutment with a rounded shoulder of the oval head 14 in the form of two rounded edges 127A, 127B. The outermost end 130 of the oval head 114 is roundly tapered to facilitate insertion of the oval head 114 into the hole  
25 116. In the previous preferred embodiment shown in Figures 1 to 3, the outermost end 30 of the diamond head 14 is also tapered with two straight sides 30A and 30B to facilitate insertion of the diamond head 14 into the hole  
16.

30 Referring now to the preferred embodiments shown in Figures 1 to 3, the diamond head 14 is at least in part of a thickness 20 greater than the thickness of a remainder of the tag 10. Thus, the diamond head 14 thickness 20 is

greater than the thickness 32 of the strap 18 or end portion 17 of the tag 10. Thus the diamond head 14 is raised so as to have greater visual prominence which assists in identification of the tag when indicia are applied to an upper surface 30 of the diamond head 14. For example, indicia indicating a cable number, a type of electrical appliance, safety information or any other information can be pre-applied to the surface 30 of the diamond head 14 to assist in ease of identification of the cable. In some embodiments, braille can be applied to the enlarged portion of the tag to permit use of the tag by visually impaired persons. In some embodiments the indicia can be applied by a marker pen or other marking device to a blank upper surface 30 once the cable tag 10 is applied. In still further embodiments the raised upper surface 30 can even be formed of a different colour material, or glow in the dark material, to further enhance its visual appearance.

Depending on the chosen length of the strap portion 18 of the tag 10, the tag 10 can provide tying for one or a large number of cables of various diameters, or even a single cable that is looped around itself for storage.

A plurality of tags 10 of the type shown in Figures 1 to 3 can be formed as part of a single card for ease of manufacture and supply to a user. A preferred embodiment shown in Figure 4. Tags 10 are detached from the card 200 immediately prior to use. Each tag 10 is frangibly joined to the card 200 for detachment therefrom and each tag 10 is made of the same material as the card. The outline of each tag 10 is stamped or pressed into the card 200 during its manufacture. A user can dispense a tag 10 from the card as a need arises by simply breaking the frangible joint 202 between the tags 10 and card 200 and levering

each tag 10 away from the body of the card 200. In the preferred embodiment a card rim portion 204 of the card 200 remains once the tags 10 are detached.

In further preferred embodiments of the invention, 5 the tags formed in a card need not be identical but can have different shape and size dimensions determined by the stamping tool used.

Figure 5 shows a preferred embodiments of the invention where the tags 110 have preprinted appliance 10 names on the raised oval head 114. These appliance names can be embossed (or recessed) into the thicker oval head 114 portion or stencilled or printed thereonto. It is envisaged that the tags 10, 110 will be made available as part of a card (for example in the card 200 shown in 15 Figure 4) and will be available in sets suitable for a workshop, a home and an office, for example. In a workshop, typical appliance names for preprinting onto tags can include drill, fan, lathe, cutter, welder etc. In a home, typical appliance names can include alarm 20 clock, television, kettle, toaster, heater, fan, iron, microwave etc. In an office, typical appliance names can include fax machine, computer, printer, scanner, powerboard, photocopier etc. Other applications are also envisaged (eg. in hospitals and medical centres; in a 25 computer manufacturing operation where individual cables within a computer panel require labelling).

The tags 14 are arranged on the card 200 with the appliance names arranged in a readable array (ie. oriented in a single direction), which facilitates ease of use 30 without having to constantly turn the card around looking for a particular tag. In other embodiments cards can be manufactured wherein consecutive tags are arranged end to

end and thus the appliance names on consecutive tags are reversed.

Such a system for identifying a cable of an electrical appliance by tagging can allow a user to readily identify the appliance to which the cable is connected, or to  
5 identify the cable itself, in situations where a plurality of cables may be located in close proximity to one another. In some situations when the wrong cable is about to be unplugged the invention can provide a check step for  
10 a user, which can be important to maintain productivity, reduce frustration and for matters of safety.

In further embodiments within the scope of the invention, preprinted tags can be applied to the identification of ropes, hoses, cords, key tags and the  
15 like.

In further embodiments of the invention, the enlarged portion need not be located at one end of an elongate tag but can be positioned somewhere along the length of the tag. In still further embodiments the hole need not be  
20 located at an end of an elongate tag either, but can be positioned at any position along the length of the tag. It should also be observed that there is also no particular requirement for the tag have as narrow and elongate proportions as shown in the Figures, and in other  
25 embodiments the tag can be broader in transverse width to more sturdily surround a bundle of cables, for example.

Typically the tag is made of a polymer, flexible plastic, synthetic or natural rubber and the like so as to be flexibly moved around a loop or a bundle of cables  
30 which still being sufficiently strong so as to be able to support the weight of the bound cables if the tag is suspended, for example.

The use of the tying device described is not limited to electrical cable tying but can find broader use in securing and tying applications for all manner of cables, ropes, hoses, cords and the like.

5        Whilst the invention has been described with reference to preferred embodiment it should be appreciated that the invention can be embodied in many other forms.

10        It is to be understood that, if any prior art information is referred to herein, such reference does not constitute an admission that the information forms a part of the common general knowledge in the art, in Australia or any other country.

**CLAIMS**

1. A tying device including:
  - an elongate member for releasable securement at a cable by wrapping around the cable; and
  - an enlarged portion arranged on the member for insertion through a hole located in the member, the enlarged portion being at least in part of a thickness greater than a narrowest width dimension of the hole.
2. A tying device as claimed in claim 1 wherein the enlarged portion is of a transverse width greater than any width dimension of the hole.
3. A tying device as claimed in claim 1 or claim 2 wherein the enlarged portion is located at one end of the elongate member.
4. A tying device as claimed in claim 3 wherein the hole is located adjacent to an opposite end of the elongate member.
5. A tying device as claimed in any one of the preceding claims wherein the enlarged portion defines a shoulder where it joins the elongate member such that, in use when the enlarged portion has been inserted through the hole, the shoulder is seated at and abuts an edge of the hole to releaseably secure the device at the cable.
6. A tying device as claimed in claim 5 wherein the shoulder is at least partially rounded.
7. A tying device as claimed in claim 5 wherein the shoulder is bevelled.
8. A tying device as claimed in any one of claims 5 to 7 wherein the width of the hole is equivalent to or greater than the width of the elongate member.

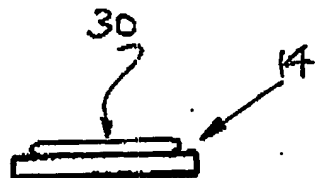
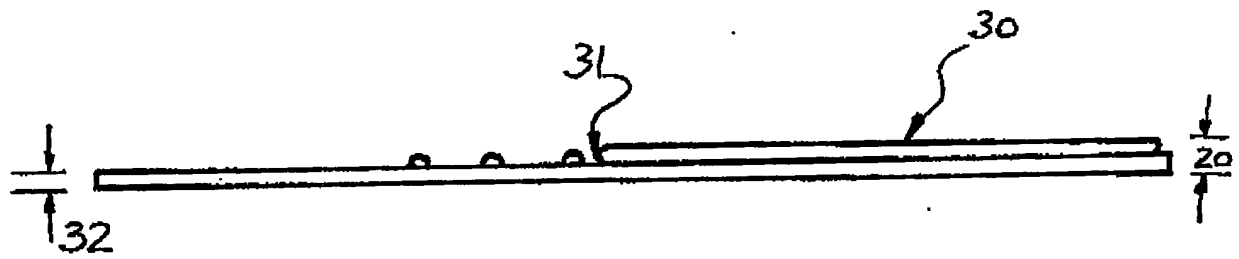
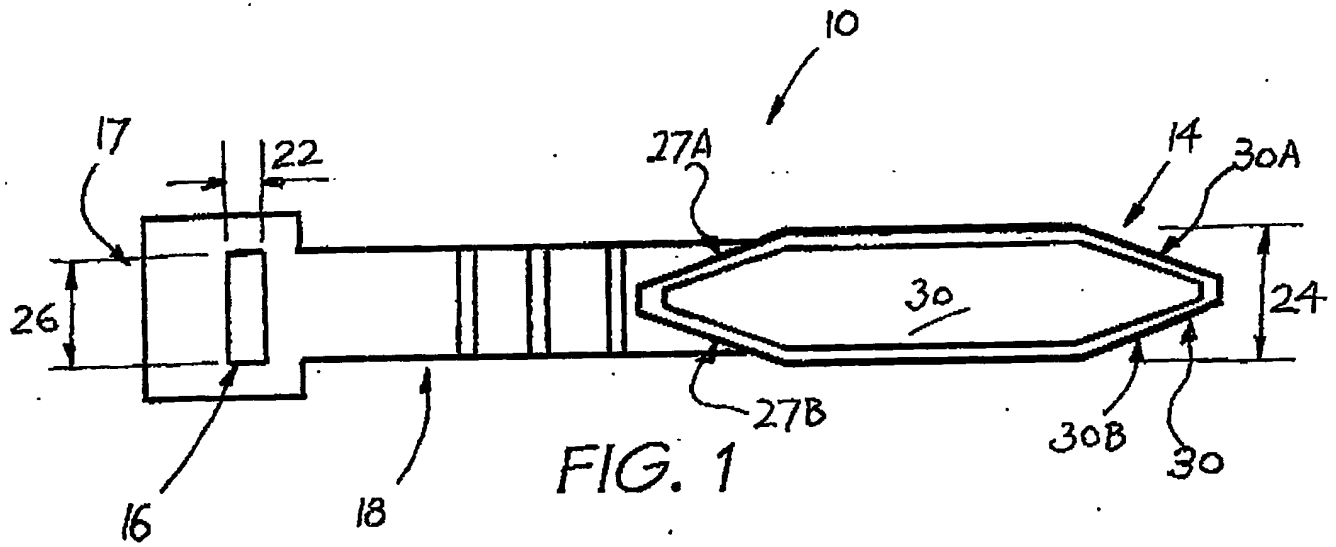
9. A tying device as claimed in any one of the preceding claims wherein a remote end of the enlarged portion is tapered to facilitate insertion thereof into the hole.
- 5 10. A tying device as claimed in any one of the preceding claims wherein the enlarged portion of the device at least is made of a flexible material.
11. A tying device as claimed in any one of the preceding claims wherein the elongate member is a strap.
- 10 12. A tying device including:
- an elongate member for releasable securement at a cable by wrapping around the cable;
  - an enlarged portion arranged on the member for insertion through a hole located in the member, the enlarged portion including a raised portion thereon to provide that part of the enlarged portion with a thickness greater than a remainder of the enlarged portion.
- 15
13. A tying device as claimed in claim 12 wherein the part of the enlarged portion that is raised has a thickness which is also greater than the elongate member.
- 20
14. A tying device as claimed in claim 12 or claim 13 wherein the elongate member has the same thickness as the remainder of the enlarged portion.
- 25
15. A tying device as claimed in any one of claims 12 to 14 wherein indicia is pre-applied to an external surface of the raised portion which in use can facilitate identification of a cable to which the tying device is releasably secured.
- 30
16. A tying device as claimed in any one of claims 12 to 15 wherein the device is as otherwise defined in any one of claims 1 to 11.



17. A tying device including:
- an elongate member for releasable securement at a cable by wrapping around the cable; and
  - enlarged portions at respective opposing ends of the member, each being enlarged relative to the member for the length of the member, with one enlarged portion being insertable through a hole located in the other enlarged portion.
18. A tying device as claimed in claim 17 wherein the device is as otherwise defined in any one of claims 1 to 16.
19. A tying device for identifying a cable of an electrical appliance, the tying device being attachable to the cable and having a preprinted appliance name thereon.
20. A tying device as claimed in claim 19 wherein the preprinted appliance name is located on an external surface of an enlarged portion of the tying device.
21. A tying device as claimed in claim 19 or claim 20 wherein a plurality of the tying devices are supplied as part of a unit and are detachable from the unit for use.
22. A tying device as claimed in claim 21 wherein the unit is a card.
23. A tying device as claimed in any one of claims 19 to 22 wherein the device is as otherwise defined in any one of claims 1 to 18.
24. A card including a plurality of detachable elongate members, each of the members being frangibly joined to the card for detachment therefrom and each being made of the same material as the card, an enlarged portion being defined in at least one of the members for insertion in use through a hole located in the

member, the enlarged portion being at least in part of a thickness greater than a narrowest width dimension of the hole or a thickness of an adjacent part of the elongate member.

- 5 25. A card as claimed in claim 24 wherein the enlarged portion has a transverse width greater than the transverse width of an adjacent portion of the elongate member.
- 10 26. A card as claimed in claim 24 or claim 25 wherein each member is as otherwise defined in any one of claims 1 to 23.
- 15 27. A system for differentiating two or more cables of two or more respective appliances, the system including a respective means for labelling each cable, wherein each means for labelling is provided in a differentiated form from each other means for labelling.
- 20 28. A system as claimed in claim 27 wherein each means for labelling includes a tying device for tying the means to its respective cable.
29. A system as claimed in claim 28 wherein the tying device is as otherwise defined in any one of claims 1 to 23.
- 25 30. A system as claimed in claim 28 wherein the means for labelling are respectively the plurality of detachable elongate members on the card as defined in any one of claims 24 to 26.
31. A tying device substantially as herein described with reference to the accompanying drawings.
- 30 32. A card substantially as herein described with reference to the accompanying drawings.
33. A system substantially as herein described with reference to the accompanying drawings.



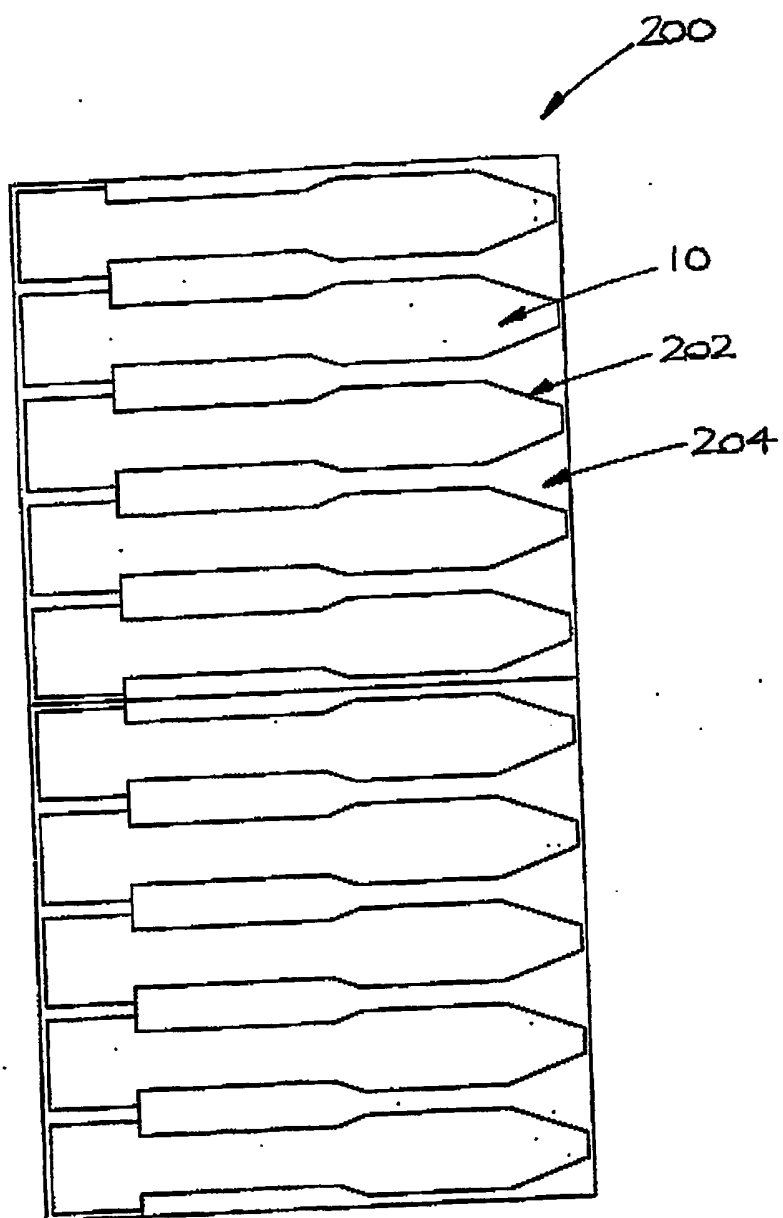


FIG. 4

